

PATENT COOPERATION TREATY

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NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

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Date of mailing (day/month/year)

16 August 1999 (16.08.99)

International application No.

PCT/GB99/00020

Applicant's or agent's file reference

A25411 WO

International filing date (day/month/year)

05 January 1999 (05.01.99)

Priority date (day/month/year)

08 January 1998 (08.01.98)

Applicant

LAM, Kenneth, Hoo-Yin

1. The designated Office is hereby notified of its election made:



in the demand filed with the International Preliminary Examining Authority on:

26 July 1999 (26.07.99)



in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

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Authorized officer

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| | | |
|---|---|--|
| Applicant's or agent's file reference A25411 WO | FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. | |
| International application No. PCT/GB 99/00020 | International filing date (day/month/year) 05/01/1999 | (Earliest) Priority Date (day/month/year) 08/01/1998 |
| Applicant BRITISH TELECOMMUNICATIONS PUBLIC LIMITED COMPANY | | |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

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☐ furnished subsequently to this Authority in written form.

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☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 99/00020

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 H04M3/50 H04Q3/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 H04M H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| X | EP 0 529 948 A (AMERICAN TELEPHONE & TELEGRAPH) 3 March 1993 see column 1, line 50 - column 2, line 5; claim 10 ---- | 1,5,8 |
| A | US 5 347 574 A (MORGANSTEIN) 13 September 1994 see column 2, line 21 - line 68; claims 1,2 ---- | 1-10 |
| A | US 4 932 042 A (BARAL ET AL.) 5 June 1990 see column 2, line 19 - column 3, line 8 ---- | 1 |
| A | WO 97 23988 A (BRITISH TELECOMMUNICATIONS PLC) 3 July 1997 see page 3, line 5 - line 29 ----- | 1 |

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

30 March 1999

Date of mailing of the international search report

07/04/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Toussaint, F

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 99/00020

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
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| | | | NO 982845 A | 22-06-1998 |
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(71) Applicant (for all designated States except US): BRITISH TELECOMMUNICATIONS PUBLIC LIMITED COMPANY [GB/GB]; 81 Newgate Street, London EC1A 7AJ (GB).

(72) Inventor; and

(75) Inventor/Applicant (for US only): LAM, Kenneth, Hoo-Yin [GB/GB]; 8 Lancing Avenue, Ipswich, Suffolk IP4 4DG (GB).

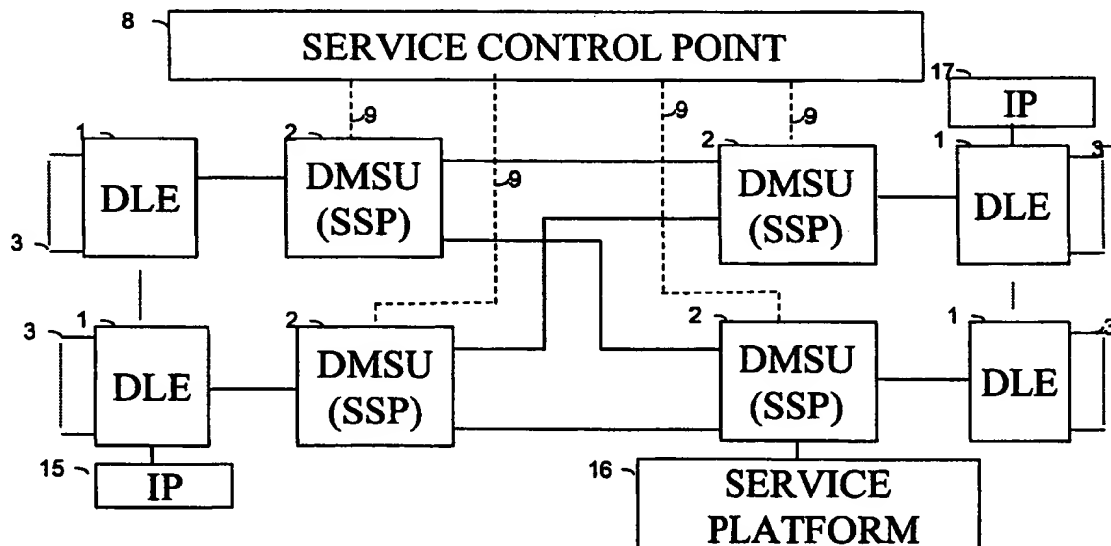
(74) Agent: BRADLEY, David, William; BT Group Legal Services, Intellectual Property Dept., Holborn Centre, 8th floor, 120 Holborn, London EC1N 2TE (GB).

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(54) Title: TELECOMMUNICATIONS NETWORKS



(57) Abstract

A telecommunications network includes a service platform (16) which provides a network based call answering service available to connected telephone lines (3) of the digital network. Calls may be selectively diverted to the service platform for answering in dependence on the customer preference. Where multiple customers are present at a particular line (3) the service platform (16) is responsive to characteristics of incoming network calls (for example calling line identify or response to prompt and collect signalling) to associate a message deposited during the same call with a particular one of the customers at line (3).

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TELECOMMUNICATIONS NETWORKS

The present invention relates to telecommunications networks and more particularly to services provided thereby.

5 Customers of telecommunications network operators, for example those who provide public switched telephone network services, are often offered extremely sophisticated services based in the network rather than in ancillary customer premises based equipments. For example, telephone answering machines which are home based are limited to answering telephone calls when the
10 customer line is free while a network based telephone answering service may use the sophistication of the network to provide a corresponding answering service when the customer line is busy or if there is no reply in addition to providing a basic answering function. Because the service is based in the network it is simpler for the customer to access the system on a remote basis from other than his base
15 location. Further, because the system is network based the shared capital costs enables significant functionality to be built into the answering service.

Increasingly, PSTN operators are turning to intelligent network functionality and service platforms based in the network to provide service to customers of a specialised nature. In the digital PSTN operated by British
20 Telecommunications plc in the UK a speech applications platform provides a "call minder" (trade mark) service.

In a typical intelligent network, referring to Figure 1 customer lines 3 are connected via digital local exchanges (DLEs) 1 which are fully interconnected by way of digital main switching units (DMSUs) 2 sometimes referred to as service
25 switching points (SSPs). Some DLEs may incorporate intelligent network SSP functionality enabling intelligent network sophistication to be brought to an extremely low level in the network. A service control point (SCP) 8 is accessible by way of signalling paths 9 to intelligence based on the SSPs 2. Thus, intelligence within the SSPs on receipt of signalling from customer premises by
30 way of the lines 3 and the DLEs 1 apply to the SCP with information such as the calling line identity of the originating party and the telephone number dialled and may seek instruction on the further handling of the call. Similarly, a SSP receiving

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a terminating call, that is a call for a called party, may apply to the SCP 8 for instructions in setting up the call.

So called intelligent peripherals 15, 17 for providing such functions as prompt and collect or other announcements may be provided in the network. More sophisticated services may be based on so called service platforms 16. It will be appreciated that since the service platforms and intelligent peripherals are network based any customer line 3 may be connected through the SSP 2 to any intelligent peripheral or service platform under control of intelligence in the SSPs in accordance with programming in the SCP.

By providing triggering in response to the network signalling of dialled telephone numbers or originating CLI it is possible to introduce diversion to service platforms or intelligent peripherals for different functions without significantly modifying the intelligence in the localised SSPs in the network.

One of the problems with a telephone answering service whether network based or dependent upon a home answering machine is that where customers share a telephone, for example in homes in multiple occupation messages left for one person may be accidentally or intentionally listened to by other persons. In any event it may be necessary for each member of the household to scan all of the messages to determine for which party the message has been left. This may result in a breach of confidentiality or in embarrassment in certain circumstances.

According to the present invention there is provided a telecommunications network including a network based telephone answering services to which calls for a particular network destination may be diverted, the network including control means programmable by customer action to select conditions under which some or all calls for the destination are diverted, the answering service further including means selectively to store respective messages and to associate such messages with a particular one of a plurality of customers of the destination in response to predetermined characteristics for an incoming call, and means to selectively play messages only on receipt of signals identifying a particular customer.

Preferably, the telephone answering service includes means to provide to a caller a listing of parties and signalling identity for said parties and to prompt said customer to key one or more additional signals to identify said respective

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customer, the system associating messages with particular customers in dependence upon the signal received.

Alternatively, the answering system may includes means responsive to signals identifying the calling party line with customer storage space.

5 If a call cannot be associated with a particular customer, for example because the calling party declines to key in a response to an invitation, calls may be stored for access by any individual using the service such that on completion of delivery of messages for a particular person general messages may also be delivered.

10 A telecommunications network including a service platform providing a telephone answering service in accordance with the invention will now be described by way of example only with reference to the accompanying drawings of which:

Figure 1 is a block schematic diagram of a typical intelligent network;

15 Figure 2 is a flow chart showing the operation for the telecommunications network of Figure 1 on receipt of a call for a connected destination;

Figure 3 comprising Figures 3a and 3b shows the operation of the service platform 16 of Figure 1 on application for retrieval of messages;

20 Figure 4 shows a signal interaction between a SSP and the SCP subsequent to triggering of the SSP by an active destination; and

Figure 5 is a schematic representation of data stored in the service platform 16 of Figure 1.

In the known call minder service, a speech applications platform (service platform) is provided in the network. A customer of one of the lines 3 who has
25 subscribed for the service is provided with a code to dial for access to the service platform 16. By use of the customer key pad transmitting multi-frequency tones, it is possible for the customer to select a number of operations in respect of exchange activity on receipt of a call for the customer's line. Thus, in a basic service mode all incoming calls for that destination may be diverted to the service
30 platform, calls when the line 3 is already engaged may be diverted and/or calls may be diverted if there is no reply within a predetermined period after ringing is applied to the customer line. Within the call minder platform the customer is able to

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dictate one or more introductory messages for transmission to a calling customer in each or any of the circumstances described above.

Calls incoming to the line 3 will therefore cause triggering at one of the SSPs 2 and the SCPs will cause information to be returned to the SSP so that the incoming call is diverted to the service platform 16 together with the called line identity. The service platform 16 will cause an announcement of the customer's message or of a standard message and will invite the caller to deposit a message for the destination.

When one or more messages are stored in the service platform 16 for a destination number represented by an exchange line 3 the SSP may be caused to modify dial tone provided to the customer so that the customer is aware of messages waiting. The customer may now call the service platform from the home telephone and retrieve messages left.

Alternatively, the customer may dial from a remote location using his own telephone number. Once the call is diverted to the service platform 16 the caller may interrupt the announcement and will be invited to provide signalling representing a personal identification number (PIN) so that message can be retrieved remotely. This also allows the service options at the service platform 16 to be amended.

Referring now to Figure 2, when homes are in multiple occupation such that a particular telephone line 3 serves a number of individuals, then the present invention provides for each person to separately subscribe for call minder service. Thus if there is a call for the destination as indicated at step 200, and referring additionally to Figure 4, triggering at the SSP causes a C7 network signal to be sent to the SCP 8 from the SSP requesting instructions. If the line is not busy as indicated at step 205, a check is carried out at step 210 to determine whether the call minder function is selected. If the call answering function is in operation for all calls as indicated at step 210 then at step 215 a determination is made as to whether this is a multiple user destination. If not, then as indicated at step 220, the call is connected to the service platform 16 in a normal single line manner. Similarly, returning briefly to step 210, if the all call divert function is not selected then a call is connected normally to the line 3 and ringing applied at step 225. While the call is ringing the system carries out a check to determine whether a

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selected answering option is to connect the call answering service if there is no reply, if not then no further action is taken. As thus far described the service is no different to other call answering services which are network based. If call minder on no reply is set as a call answering option, then at step 235 a timer will be started and the line monitored for a reply within the time out period. Thus at step 240, if the call is answered in normal manner then no further monitoring is required in respect of the call answering service. If, however, at step 240 the timer set at step 235 expires, then the system will skip to step 215 again to determine if this is a multiple user application.

10 Returning now to step 205, if the line is busy, then at step 245 the answering options for the line are checked and again if the option is not selected normal busy conditions will be returned to the calling party at step 250.

 If, at step 245, call minder on busy is set in the options for answering then the system again steps to determine whether a multiple user location is being called. Now at step 215, if the system determines that this is a multiple user destination, then as indicated at step 405 of Figure 4 the SCP 8 will cause the SSP to effect connection of one of the intelligent peripherals say 15 to cause an announcement to be played. Thus returning to Figure 2, at step 255, the identities of each destination user and a respective code for leaving messages specifically for that user may be provided. Thus, at step 410 the SCP will cause the SSP to play an announcement which may be of the form for example "welcome to BT's call minder service. To leave a message for John please press 1, to leave a message for Paul please press 2, to leave a message for . . . etc.". The intelligent peripheral say 16 having played the announcement will monitor the incoming line from the calling party for a signal to indicate that a message should be left for a particular party. This is indicated at 415 of Figure 4 and step 260 of Figure 2. At the same time as connecting to the prompt and collect peripheral, a timer is started so that if the calling customer does not select a particular person to leave a message for at step 265, when the time expires the call is returned to the service platform 16 with basic call minder identity response. Thus the SCP sends a nil response at step 420 to the SCP which then causes the SSP to connect the call through to the service platform 16 at step 425. If however, as expected the customer provides signalling indicative of a message for a particular individual at the selected

destination then the prompt and collect response is sent to the SCP which determines the specific identity at step 270 therefore causing connection to the service platform 16 with an appropriate identity so that the message is associated with the particular customer. Thus referring to Figure 5, within the system of the invention the line identity location and answering options are stored in a data store, these being those referred to at steps 210, 230 and 245. The various customers at the line identity are identified by a customer field for each customer and associated with each customer number is a location at which the customer may have recorded his or her identity. This enables the system to recover stored voice information from each individual customer. Space is provided to store location of each message associated with the particular customer so that on retrieval request from the identified customer, messages located in the service platform 16 can be identified. Finally, the retrieval options such as remote access allowed or disallowed, and the customers PIN are stored.

In an alternative method of operation, where the system is pre-programmed by customer action or by self learning to recognise that certain calling line identities from called parties usually leave messages for a particular customer, CLI may be used to select the identity without prompt and collect requirement. A confirmation message may be transmitted to the calling party indicating that the message will be stored for a particular customer and inviting the customer to press a key if this is not the required customer on this occasion.

One option given to the customer may be to leave a message for all customers at the line identity, in which case access and location of the associated message may be stored in each customer's data bank in figure 5.

Turning now to figure 3, two routes are shown by which a customer may retrieve messages from the service platform 16. Thus considering step 300, if the customer is based at the home destination and uses the telephone line 3 to effect a call to a call minder service number, then the service platform 16 will request that the customer enters the personal identification number with which he is associated at step 305. In the alternative, if a customer is remote and wishes to recover or check for messages, then by dialling the home telephone number from a remote location and waiting for the speech applications platform or the intelligent peripheral to be connected to the line to provide call minder announcements and

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interrupting such announcements using prompt and collect facility at step 315 to enter, for example, ** and PIN indicating a service call for message retrieval.

In the case of a direct access call from the home telephone line 3, a prompt and collect peripheral will be connected to the line and the customer may then enter the PIN. The validity of the PIN in association with the line 3 will be checked at step 325. Several PINs will be associated with the particular line 3, each being allocated to a particular subscriber. Thus, assuming that a valid PIN is entered then at step 330 the PIN is used to determine from the data store of Figure 5 whether there are messages for the selected customer.

10 If at step 340 it is determined that there are messages for the selected customer then at step 345 the number of messages for the particular dedicated user is enunciated and the messages may be played. This is shown as a macro function "Play Messages" at step 350 which is a function of known network based answering services.

15 On exit from the play messages macro routine, the system may carry out a check as at indicated at 355 to determine whether there are messages for other users at the location. Access to this route may be dependant upon the retrieval options set by each of the users. If this option is available and there are messages for other users at the line 3 then a simple announcement that there are messages
20 for other customers possibly with the customer identity may be played.

If the other customers are present then an invitation to enter the PIN of the customer for which messages are available (step not shown), may be provided.

Returning briefly to step 340, if there are no messages associated with the selected customer as identified at step 330 by the PIN, then the simple
25 announcement at step 370 that there are no new messages may be provided.

If there are no messages associated with the line at all, then the system may skip directly from step 370 or step 345 to an invitation to the customer to review the answering options associated with the line. Thus if the customer seeks to review, as indicated at 375, the macro function of step 380 "Call answering
30 options review" in which the current status relating to the line is played to the customer and invitation made to set or reset the options. The customer may now be invited at step 305 to review retrieval options associated with the particular customer. Again at step 390, if the customer chooses to review the retrieval

options, an opportunity to change PIN and remote access for example and/or to modify calling line identities whose calls would normally be associated with the particular customer, may be given as indicated at step 395. On completion of all of the retrieval tasks, or on clear down of the customer line prior to completion of the programme, then the call will be cleared in the normal manner.

It is noted that in the play messages function, such features as <<Store>>, <<Delete>>, and the like will be performed in known manner. It should be noted that the message location store in figure 5 may have an associated marker indicating that a stored message has already been read or accessed by the customer.

While herein, at step 370 it is assumed that the play message macro may not be entered directly, it will be appreciated that reviewing previously read and stored messages is an option available to the customer in which case the play message macro 350 may be diverted to even if there are no new messages to be played.

In a further development of the system, hereinbefore described, where at least one user at the line 3 has requested call minder service, in particular where CLI is used, then incoming call diversion to the call answering service may be based on the CLI. Thus if one of the multiple users of a line 3 is absent all calls which would normally result in storage of a message for that particular customer may be diverted to the call answering service while other calls are switched through normally.

It will be appreciated that for the above kind of service prompt and collect prior to call connection may also be used to identify the required customer. Thus call diversion to message storage and automatic answering may be end user dependant.

CLAIMS

1. A telecommunications network including a network based telephone answering system to which calls for a particular network destination may be diverted, the network including control means programmable by customer action to select conditions under which some or all calls for the destination are diverted, the telephone answering system further including means selectively to store respective messages and to associate such messages with a particular one of a plurality of customers of the destination in response to predetermined characteristics for an incoming call, and means to selectively play messages only on receipt of signals identifying a particular customer.
2. A telecommunications network as claimed in claim 1, in which the telephone answering system is responsive to receipt of a diverted call to cause information identifying each of said plurality of customers to be transmitted to a calling customer, said system connecting means responsive to calling customer action to associate a subsequently deposited message with a particular one of said plurality of customers.
3. A telecommunications network as claimed in claim 1 or claim 2, in which the telephone answering system is responsive to network signals identifying the calling party to associate a message received during the same call with a particular one of the plurality of customers.
4. A telecommunications network as claimed in claim 3, in which calls are selectively diverted to the telephone answering system or are connected to the network destination in dependence upon the network signals identifying the calling party line.
5. A telecommunications network as claimed in any preceding claim, in which calls for at least one of the plurality of customers of the network destination are required to be diverted to the telephone answering system while calls for at least one other of the plurality of customers are to be connected to the particular

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network destination the network being responsive to calls for the particular network destination to provide information to the calling party line identifying each of the plurality of customers and responding to customer reaction thereto to connect the call either to the network destination or to the telephone answering system.

6. A telecommunications network as claimed in claim 2, in which in the absence of a reaction to the information provided, a subsequently stored message is associated with more than one of the plurality of customers.

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7. A telecommunications network as claimed in claim 2 or claim 6, in which the telephone answering system is responsive to signalling from a calling party to associate a subsequently deposited message with each of the plurality of customers.

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8. A telecommunications network as claimed in any preceding claim, in which the telephone answering system is responsive to signalling identifying a particular one of the plurality of customers to play back respective messages stored for that customer.

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9. A telecommunications network as claimed in claim 8, in which subsequent subsequent to delivery of messages for the particular customer messages not associated with any particular customer or associated with all of the plurality of customers are played to the calling customer.

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10. A telecommunications network as claimed in claim 8 or claim 9, in which subsequent to playing messages for the identified one of the plurality of customers the system causes a voice announcement indicative of the presence or absence of messages for other users at the same network destination.

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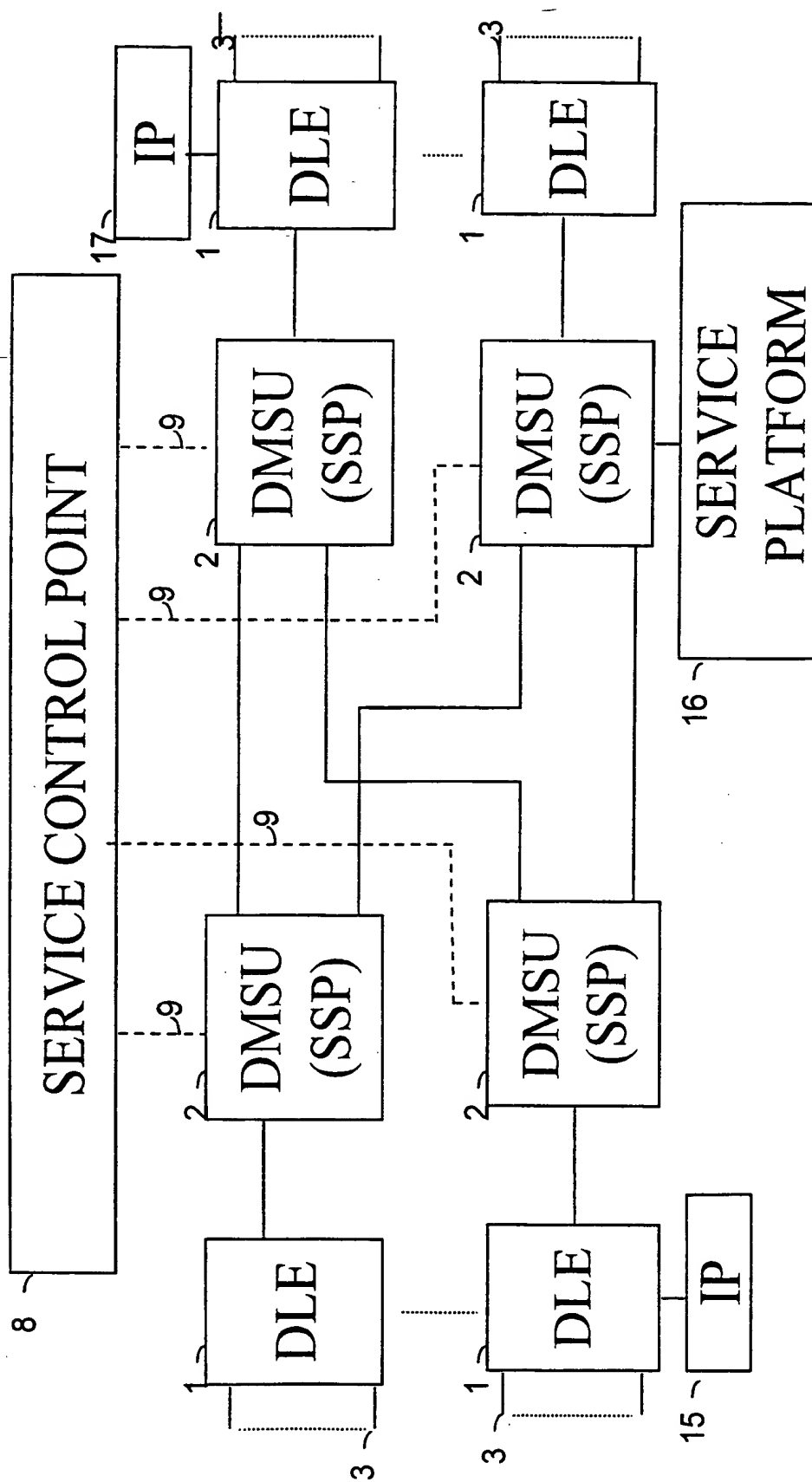


Fig 1

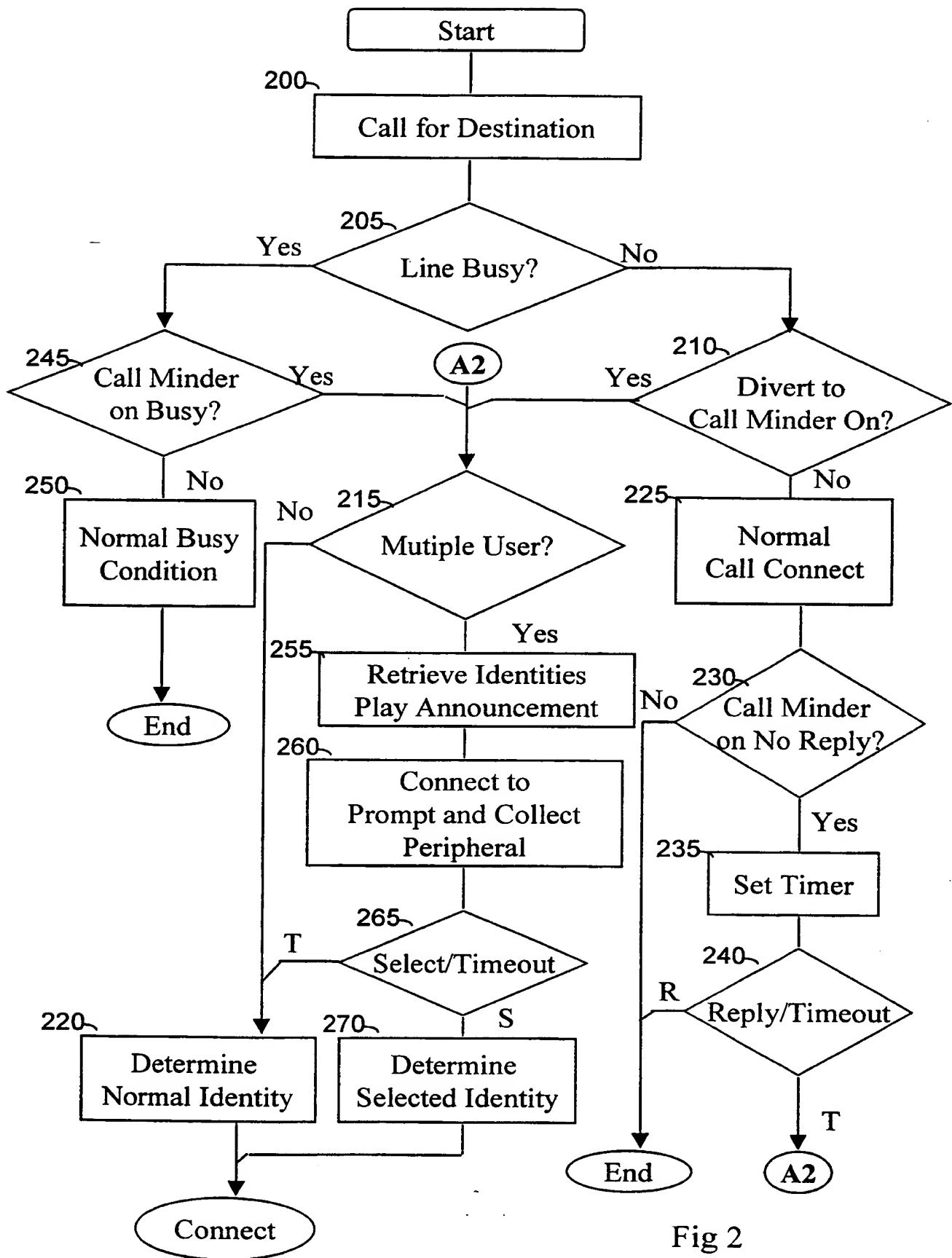


Fig 2

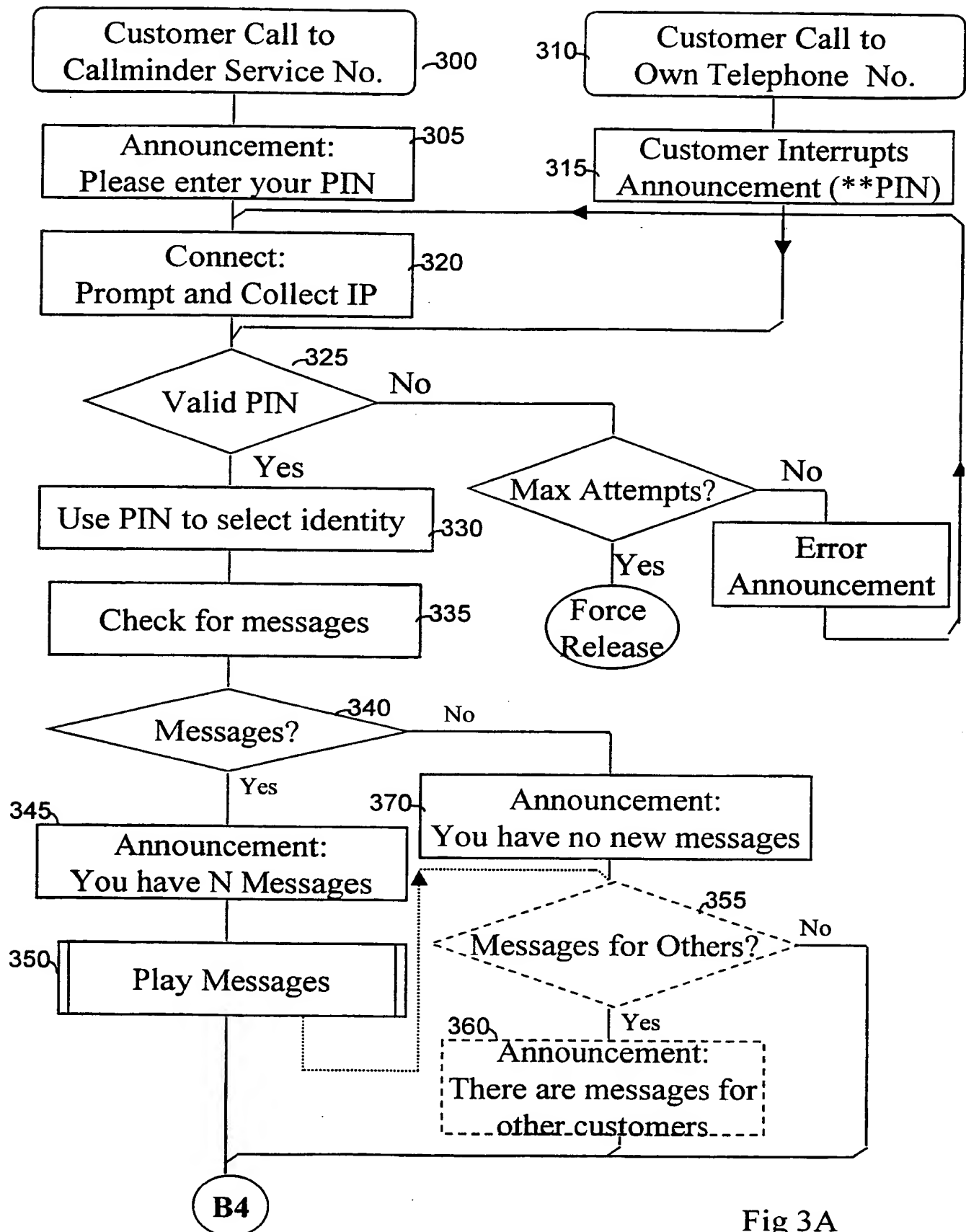


Fig 3A

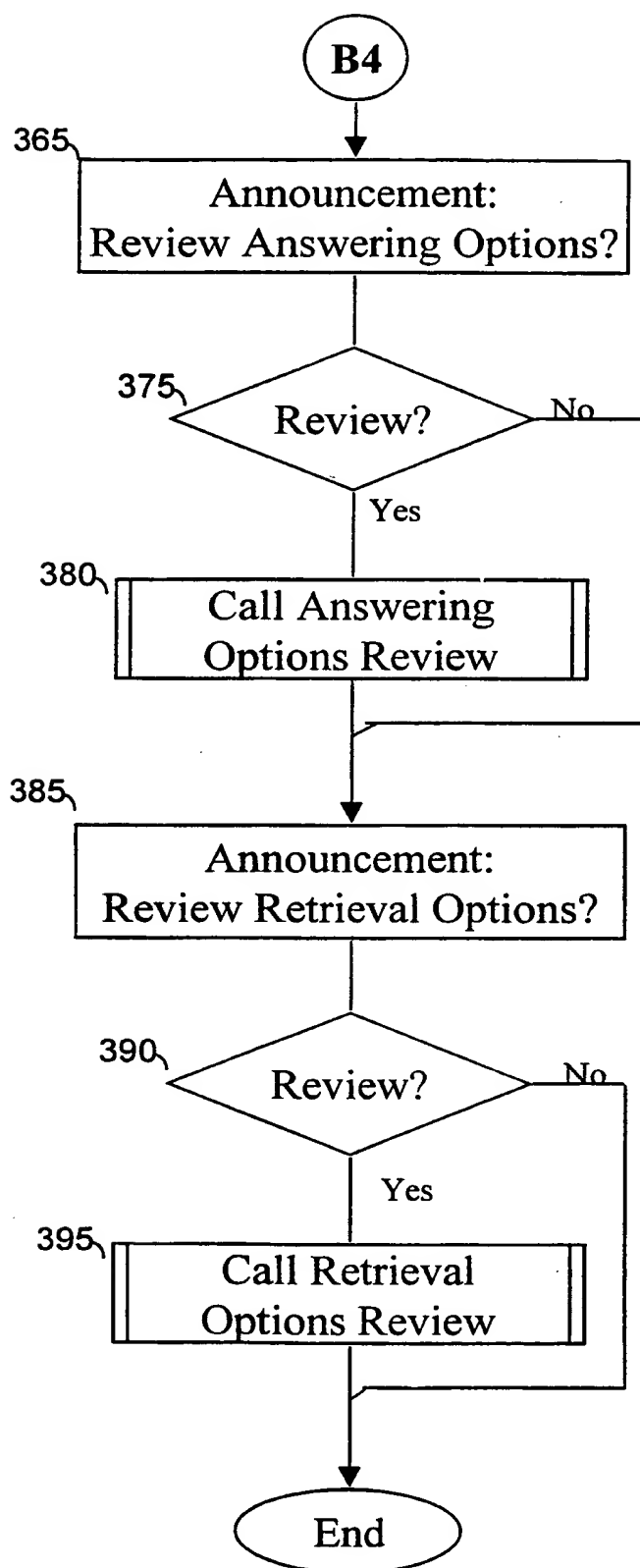


Fig 3B

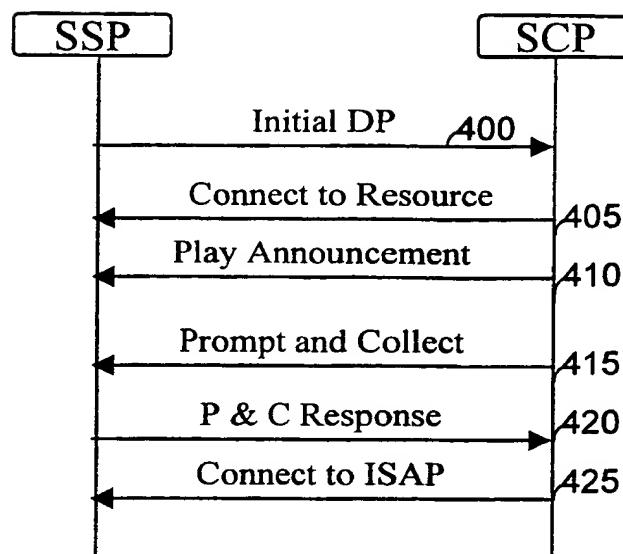


Fig 4

| | |
|------------------------|-------------------|
| Line Identity Location | |
| Answering Options | |
| Customer 1 | Identity Location |
| Message locations 1-N | |
| Retrieval Options | PIN |
| Customer 2 | Identity Location |
| Message locations 1-N | |
| Retrieval Options | PIN |
| ⋮ | |
| Message locations 1-N | |
| Retrieval Options | PIN |
| Customer 9 | Identity Location |
| Message locations 1-N | |
| Retrieval Options | PIN |

Fig 5

INTERNATIONAL SEARCH REPORT

Intern. Application No

PCT/GB 99/00020

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04M3/50 H04Q3/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 H04M H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|----------|--|-----------------------|
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| A | US 5 347 574 A (MORGANSTEIN) 13 September 1994 see column 2, line 21 - line 68; claims 1,2 --- | 1-10 |
| A | US 4 932 042 A (BARAL ET AL.) 5 June 1990 see column 2, line 19 - column 3, line 8 --- | 1 |
| A | WO 97 23988 A (BRITISH TELECOMMUNICATIONS PLC) 3 July 1997 see page 3, line 5 - line 29 ----- | 1 |

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

30 March 1999

Date of mailing of the international search report

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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040. Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Toussaint, F

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter. Appl. Application No

PCT/GB 99/00020

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